

What is claimed is:

- 1 1. A silent chain having reduced chordal action and a smooth wrapping around a sprocket
2 comprising:
3 a plurality of interlaced link plates, each link plate having a pitch P and
4 comprising:
5 a pair of teeth, each having an inside flank and an outside flank,
6 the inside flank of each tooth comprising a first circular arc with a
7 radius of curvature R_1 on an addendum side and a second
8 circular arc with a radius of curvature R_2 on a dedendum side;
9 and
10 wherein inequalities, $R_1 \geq 2 \cdot P$ and $R_1 \gg R_2$, are satisfied.
- 1 2. The silent chain of claim 1, wherein inequalities, $R_1 \geq 20 \cdot P$ and $R_1 \geq 20 \cdot R_2$, are
2 satisfied.
- 1 3. The silent chain of claim 1, wherein inequality $P_2 \geq P_1$ is satisfied, where P_1 is the
2 pitch between the outside flank and the other outside flank along pitch line
3 of a first link plate at initial engagement of the link plate with a sprocket
4 tooth, and P_2 is the pitch between the inside flank of a second link plate and
5 the inside flank of a third adjacent link plate along the pitch line.
- 1 4. The silent chain of claim 3, wherein when the chain is pulled straight, the second
2 link plate and the third link plate overlap the teeth of the first link plate.
- 1 5. The silent chain of claim 1, wherein inequality $P_1' \geq P_2'$ is satisfied, where P_1' is
2 the pitch between the outside flank and the other outside flank along pitch
3 line of the first link plate at final engagement of the link plate with a
4 sprocket tooth and P_2' is the pitch between the inside flank of the second
5 link plate and the inside flank of the third link plate along the pitch line.

- 1 6. The silent chain of claim 5, wherein the first link plate is stationary between
2 adjacent sprocket teeth when the chain is wrapped around the sprocket.
- 1 7. The silent chain of claim 5, wherein the first link plate, the second link plate,
2 and the third link plate are stationary between adjacent sprocket teeth.
- 1 8. The silent chain of claim 1, wherein the inside flank comprises a linear portion
2 on the addendum side and a circular arc portion on the dedendum side.
- 1 9. The silent chain of claim 1, wherein the inside flank comprises a first linear
2 portion on the addendum side and a second linear portion on the dedendum
3 side with a circular arc portion connecting the first linear portion to the
4 second linear portion.
- 1 10. The silent chain of claim 9, wherein the second linear portion has a different
2 gradient than the first linear portion.